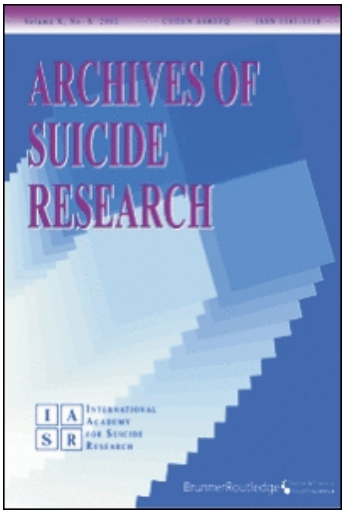
Suicide rates in the world: Update.

Schmidtke, A.; Weinacker, B.; Apter, A.; Batt, A.; Berman, A.; Bille-Brahe, U.; Botsis, A.; De Leo, D.; Doneux, A.; Goldney, R.; Grad, O.; Haring, C.; Hawton, K.; Hjelmeland, H.; Kelleher, M.; Kerkhof, A.J.F.M.; Leenaars, A.; Lonnqvist, J.; Michel, K.; Ostamo, A.

published in
Archives of Suicide Research
1999

DOI (link to publisher)
10.1080/13811119908258318

document version
Publisher's PDF, also known as Version of record



Archives of Suicide Research
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713667420

Suicide rates in the world: Update

A. Schmidtke[a]; B. Weinacker[a]; A. Apter[a]; A. Batt[a]; A. Berman[a]; U. Bille-brahe[a]; A. Botsis[a]; D. De Leo[a]; A. Doneux[a]; R. Goldney[a]; O. Grad[a]; C. Haring[a]; K. Hawton[a]; H. Hjelmeland[a]; M. Kelleher[a]; A. Kerkhof[a]; A. Leenaars[a]; J. Lönnqvist[a]; K. Michel[a]; A. Ostamo[a]; E. Salander-renberg[a]; I. Sayil[a]; Y. Takahashi[a]; C. Van Heeringen[a]; A. Varnik[a]; D. Wasserman[a]
[a] Adolescent Unit, Gehah Psychiatric Hospital, The Beilinson Medical Center, Tel-Aviv University Medical School, PO Box 120, 49100 Petah, Tiqva, Israel

To cite this Article Schmidtke, A. , Weinacker, B. , Apter, A. , Batt, A. , Berman, A. , Bille-brahe, U. , Botsis, A. , De Leo, D. , Doneux, A. , Goldney, R. , Grad, O. , Haring, C. , Hawton, K. , Hjelmeland, H. , Kelleher, M. , Kerkhof, A. , Leenaars, A. , Lönnqvist, J. , Michel, K. , Ostamo, A. , Salander-renberg, E. , Sayil, I. , Takahashi, Y. , Van Heeringen, C. , Varnik, A. and Wasserman, D.(1999) 'Suicide rates in the world: Update', Archives of Suicide Research, 5: 1, 81 — 89
To link to this Article: DOI: 10.1080/13811119908258318
URL: http://dx.doi.org/10.1080/13811119908258318

Archives of Suicide Research **5**: 81–89, 1999.

Report

Suicide rates in the world: Update *

A. SCHMIDTKE, B. WEINACKER, A. APTER, A. BATT, A. BERMAN, U. BILLE-BRAHE, A. BOTSIS, D. DE LEO, A. DONEUX, R. GOLDNEY, O. GRAD, C. HARING, K. HAWTON, H. HJELMELAND, M. KELLEHER, A. KERKHOF, A. LEENAARS, J. LÖNNQVIST, K. MICHEL, A. OSTAMO, E. SALANDER-RENBERG, I. SAYIL, Y. TAKAHASHI, C. VAN HEERINGEN, A. VÄRNIK and D. WASSERMAN

Accepted March 22, 1998

Introduction

In many countries, especially the Western countries, suicidal behavior constitutes a major public and mental health problem and a considerable drain on resources in both primary and secondary health care settings (Schmidtke, 1997). In numerous countries, the number of suicides is significantly higher than the number of deaths due to traffic accidents. There are age and gender specific cultures of suicidal behavior (Leenaars, 1995). In many countries in some age groups, especially the younger age groups, suicide is ranked after accidents as one of the leading causes of death. Due to the changing age pyramids in some countries (increasing percentage of older persons) the problem of suicidal behavior among the elderly is also increasing (Gulbinat, 1996). In recent years, especially in Europe, the rank order of suicide rates among the various countries has changed. This is partially due to the splitting up of countries. On the other hand, some countries have published official suicides rates for the first time in their history. This paper will provide a short overview of the latest available suicide figures in the world.

* The report is based on a working paper for the International Academy for Suicide Research (IASR). Authors are listed in the **Appendix**.

Materials and methods

The data were collected via WHO sources, and for different European, American and Asian countries and states via connections with suicide researchers and various statistical bureaus and organizations.[1] The latest available figures were always used.

Some countries (Belize, Brazil, Ecuador, El Salvador, Kuwait, Nicaragua, Panama, Peru, Suriname, St. Vincent and the Grenadines, and Zimbabwe) provided the WHO with suicide figures, but not population figures, so the population figures of the World Population Prospects of the United Nations (1995) were used for these states. For South Africa and Cuba, which delivered dates about causes of death to WHO but not specified the suicide category it was not possible to calculate rates.

For the classification/grouping of countries the classification of the World Population Prospects of the United Nations (1995) was used. The countries were classified into the major areas Africa, Asia, Europe, Latin America and the Caribbean, Northern America and Oceania, and according to the available figures into the regions Eastern Africa, Northern Africa, Eastern Asia, South-central Asia, South-eastern Asia, Western Asia, Eastern Europe, Northern Europe, Southern Europe and Western Europe, the Caribbean, Central America, South America, Australia-New Zealand.

The area ratios as well as the sex ratios were computed for the most recent years, including rates back to 1991. In order not to confound country effects with time effects, countries for which only rates for earlier years were available were not included in this calculation.

Results

Table 1 gives an overview of the latest available suicide figures for males and females, Figure 1 shows the rank order of the different countries.

The highest rank for male suicide rates has Lithuania, the lowest St. Vincent and the Grenadines. The highest rank for female suicide rate could be found for China (selected areas), the lowest with 0 for Egypt, St. Vincent and the Grenadines, and Belize.

The average ratio between the highest and lowest suicide rates in the world is 1:102.4 for males and 1:35.8 for females. For the North American countries the ratio is 1:1.1 for males and 1:1.2 for females, for the South American countries the ratio is 1:3.7 for males and 1:6.1 for females. For the European countries the ratio is 1:27.9 for males and 1:14.0 for females, for the Asian countries the ratio is 1:49.6 for males and 1:35.8 for females. For Australia and New-Zealand the ratio is 1:1.0 for males and 1:1.1 for females.

Table 1. Suicide rates (0–99+ years) of various countries classified into major areas and regions; Sources: annual figures: WHO databank, National Bureaus of Statistics. Department of Economic and Social Information and Policy Analysis Population Division (1995). *World population prospects. The 1994 revision.* New York: United Nations. Partly computations: Department of Clinical Psychology, Psychiatric Clinic, University of Würzburg, Germany

Country	Year	Males	Females	Female/Male ratio	% Male rate > female rate
Africa	average	7.6	2.3	3.4	82.4
Eastern Africa	average	15.1	4.6	3.4	64.9
Mauritius[1]	1994	19.8	4.1	4.8	79.3
Zimbabwe[2]	1990	10.5	5.2	2.0	50.5
Northern Africa	average	0.1	0.0	–	100
Egypt[1]	1987	0.1	0.0	–	100
Asia	average	13.9	7.0	2.6	45.4
Eastern Asia	average	16.4	11.8	1.5	23.7
China (selected areas)[1]	1994	14.3	17.9	0.8	–25.2
Hong Kong[1]	1994	13.4	11.3	1.2	15.7
Japan	1996	25.0	12.0	2.1	52.0
Republic of Korea[1]	1994	12.8	6.1	2.1	52.3
South-central Asia	average	20.9	7.3	3.0	58.8
Kazakhstan[1]	1994	39.7	9.0	4.4	77.3
Kyrgyzstan[1]	1994	22.6	3.9	5.8	82.7
Tajikistan[1]	1990	5.4	3.4	1.6	37.0
Turkmenistan[1]	1994	8.1	3.4	2.4	58.0
Uzbekistan[1]	1993	9.3	3.2	2.9	65.6
Sri Lanka[1]	1986	46.9	18.9	2.5	59.7
Singapore[1]	1994	14.0	9.6	1.5	31.4
Western Asia	average	4.5	1.8	3.2	53.5
Armenia[1]	1990	3.9	1.7	2.3	56.4
Azerbaijan[1]	1994	0.8	0.5	1.6	37.5
Bahrain[1]	1988	4.9	0.5	9.8	89.8
Georgia[1]	1990	5.4	2.0	2.7	63.0
Israel	1994	11	4	2.8	63.6
Kuwait[2]	1994	2.1	1.5	1.4	29.0
Turkey	1997	3.8	2.4	1.5	35.3

Table 1. Continued

Country	Year	Males	Females	Female/Male ratio	% Male rate > female rate
Europe	average	30.0	8.2	3.6	69.7
Eastern Europe	average	38.8	9.4	4.2	74.3
Belarus	1995	55.7	9.4	5.9	83.1
Bulgaria[1]	1994	25.3	9.7	2.6	61.8
Czech Republic[1]	1993	28.1	9.5	3.0	66.2
Hungary[1]	1994	55.5	16.8	3.3	69.7
Poland[1]	1994	24.7	4.5	5.5	81.7
Republic of Moldova[1]	1994	29.5	7.6	3.9	74.2
Romania[1]	1992	18.5	4.9	3.8	73.3
Russian Federation[1]	1994	74.1	13.3	5.6	82.1
Ukraine[1]	1992	38.2	9.2	4.2	76.0
Northern Europe	average	36.7	9.1	3.9	71.4
Denmark	1995	24.1	11.3	2.1	53.3
Estonia	1996	64.6	14.2	4.5	78.0
Finland	1995	43.4	11.8	3.7	72.8
Iceland[1]	1994	15.8	3.0	5.3	81.0
Ireland	1995	17.4	4.1	4.2	76.1
Latvia[1]	1994	71.4	14.1	5.1	80.2
Lithuania[1]	1994	81.9	13.4	6.1	83.7
Norway	1994	17.7	6.9	2.6	61.0
Sweden	1996	20.0	8.5	2.4	57.5
United Kingdom	1996	11.0	3.3	3.4	70.4
Southern Europe	average	16.0	4.8	3.4	68.0
Albania[1]	1993	2.9	1.7	1.7	42.6
Croatia[1]	1994	34.6	11.7	3.0	66.3
Greece	1995	5.9	1.2	4.9	79.7
Italy	1996	9.6	3.2	3.0	66.7
Malta[1]	1994	6.6	1.6	4.1	75.5
Portugal[1]	1994	12.3	3.4	3.6	72.3
Slovenia	1995	45.1	12.6	3.6	72.1
Spain[1]	1992	11.0	3.4	3.2	68.9
Western Europe	average	28.6	9.6	3.0	65.1
Austria	1996	34.2	10.7	3.2	68.8
Belgium	1993	37.3	11.9	3.1	68.0
France	1995	30.4	10.8	2.8	64.5
Germany	1996	21.8	8.3	2.6	61.9
Luxembourg[1]	1994	30.8	6.3	4.9	79.5
Netherlands	1995	16.2	8.0	2.0	50.6
Switzerland	1995	29.5	11.1	2.7	62.4

Table 1. Continued

Country	Year	Males	Females	Female/Male ratio	% Male rate > female rate
America[3]					
Latin America and Caribbean	average	7.7	2.0	4.3	73.1
Caribbean	average	9.4	1.8	4.9	74.8
Barbados[1]	1992	8.9	2.2	4.0	75.3
Jamaica[1]	1985	0.5	0.2	2.5	60.0
Puerto Rico[1]	1991	18.4	2.0	9.2	89.1
St. Vincent and the Grenadines[1]	1984	0.0	0.0	–	–
Trinidad and Tobago[1]	1991	19.0	4.8	4.0	74.7
Central America	average	5.8	1.7	4.7	77.3
Belize[2]	1989	1.1	0.0	–	100
Costa Rica[1]	1991	7.1	1.2	5.9	83.1
El Salvador[2]	1991	13.0	6.0	2.2	53.9
Mexico[1]	1993	4.5	0.7	6.4	84.4
Nicaragua[2]	1991	4.3	1.8	2.4	57.5
Panama[2]	1989	5.0	0.8	6.6	84.8
South America	average	7.8	2.5	3.2	67.3
Argentina[1]	1990	9.7	3.7	2.6	61.9
Bahamas[1]	1987	2.4	0.0	–	100
Brazil[2]	1989	4.6	1.4	3.2	69.0
Chile[1]	1992	8.4	1.4	6.0	83.3
Colombia[1]	1991	4.9	1.3	3.8	73.5
Ecuador[2]	1990	5.7	3.0	1.9	47.4
Paraguay (reporting areas)[1]	1987	3.3	2.1	1.6	36.4
Peru[2]	1988	0.7	0.3	2.3	55.6
Saint Lucia[1]	1986–88	11.0	3.0	3.7	72.7
Suriname[2]	1992	18.2	7.9	2.3	56.4
Uruguay[1]	1990	16.6	4.2	4.0	74.7
Venezuela[1]	1989	7.8	1.8	4.3	76.9
Northern America	average	20.7	4.9	4.2	76.2
Canada[1]	1995	21.5	5.4	4.0	74.7
United States of America	1995	19.8	4.4	4.5	77.8
Oceania	average	21.0	5.2	4.0	75.2
Australia-New Zealand	average	21.0	5.2	4.0	75.2
Australia	1996	21.5	5.0	4.3	76.7
New Zealand[1]	1993	20.5	5.4	3.8	73.7
All countries from 1991 on	average	19.3	5.3	3.6	64.7

[1] Source of data: *World health statistics annual* and authors.
[2] Sources of data: *World health statistics annual* and *World population prospects, The 1994 revision.*
[3] Classification by the authors.

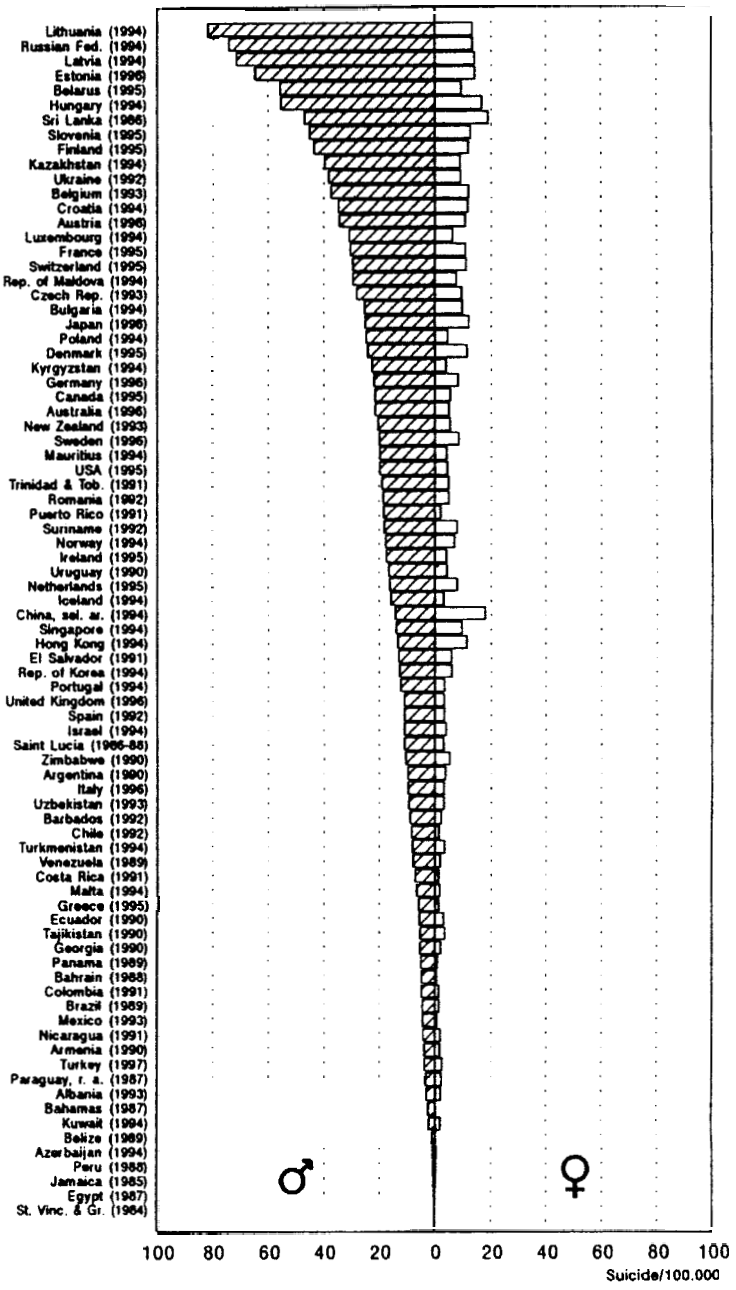


Figure 1. Rank order of suicide rates (0–99+ years) of various countries; Source: see Table 1

With one exception (China), in all countries the male rates are higher than the female rates. The average female/male ratio is 1:3.6. For the North American countries the ratio is 1:4.2, for the South American countries the ratio is 1:3.2, and for the European countries 1:3.6, for the Asian countries 1:2.6. For Australia and New-Zealand the ratio is 1:4.1.

Discussion

According to the latest official figures released by WHO and the individual National Bureaus of Statistics, the suicide rates among the countries differ widely. Since the beginning of the official registration, Hungary has been the country with the highest suicide rates in Europe (if not in the World). However, Hungary is now surpassed by some of the new Russian and Baltic states. The highest male rates are found for Lithuania, the Russian Federation, Latvia, Estonia, Belarus and Hungary.

Nordic and Eastern European countries also have somewhat higher suicide rates, while the southern parts of Europe have comparatively low suicide rates. America and Asia generally have lower rates than most of the European countries.

The male rates are, with one exception (China), in all countries – even the countries with very low rates – higher than the female rates. Up to now there is no sufficient explanation for the Chinese exception. More research on this exception is needed.

As a first explanation for these differences among the countries, the question of the reliability and validity of death certification and reporting has often been raised. The countries differ widely with regard to their death certification procedures, ranging from a coroner system (U.S.A., U.K.) to the possibility that every general practitioner can sign the death certificate (for example Germany). Also, the rate of autopsies varies greatly with, for example, high rates in Austria and very low rates in Germany. Therefore, the quality and reliability of official mortality reporting varies tremendously among the various countries. However, the available figures give at least a rough picture about the situation of the problem in the world.

Note

1. We would especially like to thank the following persons and institutions for their help in collecting data: WHO Geneva; Institut National de Statistique Bruxelles; Reverend Yukio Saito, Japan; National Police Agency, Japan; Statistisches Bundesamt, Wiesbaden; Statistisches Bundesamt, Zweigstelle Berlin.

Appendix

A. Apter, Director, Adolescent Unit, Gehah Psychiatric Hospital, The Beilinson Medical Center, Tel-Aviv University Medical School, PO Box 120, 49100 Petah – Tiqva, Israel.

A. Batt, Faculté de Médicine, Département de Santé Publique, 2 av du Pr Léon Bernard, 35043 Rennes Cedex, France.

T. Berman, Executive Director, American Association of Suicidology (AAS), Suite 310, 4201 Connecticut Ave., NW, Washington, DC 20008, USA.

U. Bille-Brahe, Centre for Suicidological Research, Tietgens Allé 108, 5230 Odense M, Denmark.

A. J. Botsis, Director, Department of Psychiatry, 414 Athens Army Hospital, Office 6, Gen. Veliou Street, Pendeli, Athens 15236, Greece.

D. De Leo, University of Padua, Psychogeriatric Service, Department of Neurology and Psychiatry, Via Vendramini 7, 35137 Padua, Italy.

A. Doneux, Institut National de Statistique, Rue de Louvain 44, 1000 Bruxelles, Belgium.

R. D. Goldney, University of Adelaide, Department of Psychiatry, The Adelaide Clinic, 33 Park Tce., 5081 Gilberton, S. Aus., Australia.

O. Grad, Centre for Mental Health, University Psychiatric Hospital, Zaloska 29, 1000 Ljubljana, Slovenia.

C. Haring, Psychiatric State Hospital Hall i.T., Thurnfeldgasse 14, 6060 Hall i.T., Austria

K. Hawton, University of Oxford, Department of Psychiatry, Warneford Hospital, Oxford, OX3 7JX, UK.

H. Hjelmeland, Norwegian University of Science and Technology, Faculty of Medicine, Department of Psychiatry and Behavioural Science, Ostmarkv. 15, 7002 Trondheim, Norway.

M. J. Kelleher, National Suicide Research Foundation, 1 Perrott Avenue, College Road, Cork, Ireland.

A. J. M. F. Kerkhof, Department of Clinical Psychology, Vrije Universiteit, De Boelelaan 1109, 1081 HV Amsterdam, The Netherlands.

A. A. Leenaars, Clinical Psychologist, 880 Quellette Avenue, Suite 806, Windsor, Ontario N9A 1C7, Canada.

J. Lönnqvist, National Public Health Institute, Department of Mental Health and Alcohol Research, Mannerheimintie 166, 00300 Helsinki, Finland.

K. Michel, Psychiatrische Poliklinik, Universitätsspital, Mürtenstraße 21, 3010 Bern, Switzerland.

A. Ostamo, National Public Health Institute, Department of Mental Health and Alcohol Research, Mannerheimintie 166, 00300 Helsinki, Finland.

E. Salander-Renberg, University of Umeå, Department of Psychiatry, 90185 Umeå, Sweden.

I. Sayil, A.Ü. Krize Müdahele Merkezi, Tip Fakültesi Cebeci Kampüsü, Dikimevj, Ankara, Turkey.

A. Schmidtke, University of Würzburg, Department of Psychiatry, Füchsleinstraße 15, 97080 Würzburg, Germany.

Y. Takahashi, Tokyo Institute of Psychiatry, Department of Psychopathology, 2-1-8 Kamikitazawa, Setagaya-ku, Tokyo 156, Japan.

K. Van Heeringen, University Hospital, Department of Psychiatry, De Pintelaan 185, 9000 Gent, Belgium.

A. Värnik, Estonian-Swedish Suicidological Institute, Pärnu Mnt. 104-202, Magdalena Hospital, Tallinn EE0013, Estonia.

D. Wassermann, Karolinska Institute, Centre for Suicide Research and Prevention, Tomtebodavägo 11K, 171 77 Stockholm, Sweden.

B. Weinacker, University of Würzburg, Department of Psychiatry, Füchsleinstraße 15, 97080 Würzburg, Germany.

References

Department for Economic and Social Information and Policy Analysis Population Division (1995). *World population prospects. The 1994 revision.* New York: United Nations.

Gulbinat, W. (1996). The epidemiology of suicide in old age. *Archives of Suicide Research, 2,* 31–42.

Leenaars, A. (1995). Suicide. In H. Wass & R. A. Neimeyer (Eds.), *Dying: Facing the facts* (3rd edn) (= Series in death education, aging, and health care) (pp. 347–383). Philadelphia: Taylor & Francis.

Schmidtke, A. (1997). Perspective: Suicide in Europe. *Suicide and High-Threatening Behavior, 27,* 127–135.

World Health Organization (1991). *World health statistics annual 1990.* Geneva: WHO.

World Health Organization (1992). *World health statistics annual 1991.* Geneva: WHO.

World Health Organization (1993). *World health statistics annual 1992.* Geneva: WHO.

World Health Organization (1994). *World health statistics annual 1993.* Geneva: WHO.

World Health Organization (1995). *World health statistics annual 1994.* Geneva: WHO.

World Health Organization (1996). *World health statistics annual 1995.* Geneva: WHO.

Address for correspondence: A. Schmidtke, Department of Psychiatry, University of Wurzburg, Fuchleinstrasse 15, D-97080 Wurzburg, Germany
Tel.: +49 931-203 248/293. Fax: +49 931-203 365